

STATE WEATHER SERVICES.

[Temperature in degrees Fahrenheit; precipitation, including melted snow, in inches and hundredths.]

The following extracts and summaries are republished from reports for August, 1891, of the directors of the various state weather services:

ALABAMA.

Temperature.—Maximum, 102, at Wiggins, 19th; minimum, 44, at Valley Head, 25th; greatest monthly range, 49, at Valley Head and Pine Apple; least monthly range, 30, at Chepultepec.

Precipitation.—Greatest monthly, 8.08, at Eufaula; least monthly, 0.21, at Bermuda.

Wind.—Prevailing direction, northwest—*P. H. Mell, Observer, Weather Bureau, Auburn, director.*

ARKANSAS.

The month was remarkable for extremely low temperature.

Temperature.—The mean was 1.9 below the normal; maximum, 108, at Reeses Ferry, 17th; minimum, 39, at Rogers, 24th; greatest monthly range, 60, at Reeses Ferry; least monthly range, 25, at Winslow.

Precipitation.—The average was about normal; greatest monthly, 5.80, at Dallas; least monthly, 0.25, at Pine Bluff.

Wind.—Prevailing direction, southwest.—*M. F. Locke, Commissioner of Agriculture, Little Rock, director; F. H. Clarke, Observer, Weather Bureau, assistant.*

COLORADO.

Temperature.—The month was slightly warmer than usual along the Arkansas Valley, and about the average in other sections; maximum, 103, at Cheyenne Wells; minimum, 25, at Platoro, 31st.

Precipitation.—About one-half the usual amount of rain fell in the upper Arkansas and San Luis valleys, and west of the mountains, except in the extreme northwest; in all other sections the precipitation equaled or exceeded the average; greatest monthly, 5.77, at Jefferson; least monthly, 0.04, at Arboles.

Wind.—Prevailing directions, southeast to east over west and northeast parts of the state; elsewhere it was from northwest to southwest.—*W. S. Miller, Observer, Weather Bureau, Denver, director.*

ILLINOIS.

Temperature.—The mean was 1.5 below the normal; maximum, 103, at Centralia, 10th; minimum, 40, at Hennepin and Philo, 28th.

Precipitation.—The average was 1.56 above the normal; greatest monthly, 8.51, at McLeansborough; least monthly, 1.24, at Winnebago.

Wind.—Prevailing direction, northwest.—*John Craig, Observer, Weather Bureau, Springfield, director.*

INDIANA.

Temperature.—Maximum, 99, at Mauzy, 10th; minimum, 41, at Logansport, 25th and 28th; greatest monthly range, 56, at Mauzy; least monthly range, 34, at Butlerville.

Precipitation.—Greatest monthly, 11.45, at Worthington; least monthly, 2.70, at Princeton.

Wind.—Prevailing direction, southwest.—*Prof. H. A. Huston, La Fayette, director; C. F. R. Wappenhans, Observer, Weather Bureau, assistant.*

IOWA WEATHER AND CROP SERVICE.

Temperature.—The mean was slightly below the normal; maximum, 106, at Glenwood, 7th, and at Blakeville, 9th; minimum, 37, at Atlantic, 24th and 28th; greatest monthly range, 64, at Glenwood; least monthly range, 42, at Independence.

Precipitation.—The average was slightly above the normal; greatest monthly, 13.02, at Maxon; least monthly, 1.23, at Mason City.

Wind.—Prevailing direction, south.—*J. R. Sage, Des Moines, director; G. M. Chappel, Observer, Weather Bureau, assistant.*

KANSAS.

Temperature.—Maximum, 110, at Collyer, 9th; minimum, 36, at Lebo and Atwood, 24th; greatest monthly range, 67, at Eureka Ranch; least monthly range, 42, at La Crosse.

Precipitation.—Greatest monthly, 5.03, at Morse; least monthly, trace, at Grenola.

Wind.—Prevailing direction, south.—*Prof. J. T. Lovewell, Topeka, director; T. B. Jennings, Observer, Weather Bureau, assistant.*

KENTUCKY.

Temperature.—The mean was about 2.0 below the normal; maximum, 98, at Shelbyville, 10th, and at Princeton, 14th; minimum, 43, at Springfield, 29th; greatest monthly range, 54, at Shelbyville; least monthly range, 38, at Middlesborough.

Precipitation.—The average was about 2.00 above the normal; greatest monthly, 9.23, at Earlinton; least monthly, 2.72, at Shelbyville.

Wind.—Prevailing direction, south.—*Prof. E. H. Mark, Louisville, director; Frank Burke, Observer, Weather Bureau, assistant.*

LOUISIANA.

The cold wave of the 23d injured cotton and cane.

Temperature.—The temperature was above the normal; maximum, 102, at

Liberty Hill, 20th; minimum, 45, at Winnsborough, 23d, at Cameron, 30th, and at Davis, 24th; greatest monthly range, 54, at Winnsborough, Liberty Hill, Coushatta, and Cameron; least monthly range, 22, at Port Eads.

Precipitation.—The average was below the normal; greatest monthly, 5.34, at Port Eads; least monthly, 0.20, at Delhi.—*George E. Hunt, Observer, Weather Bureau, New Orleans, director.*

MARYLAND.

Temperature.—Maximum, 98, at Kirkwood, Del., 10th, 22d, and 23d; minimum, 37, at Mount Saint Marys, 29th; greatest monthly range, 56, at Mount Saint Marys; least monthly range, 18, at Summit Hall.

Precipitation.—Greatest monthly, 6.17, at Barren Creek Springs; least monthly, 3.00, at Summit Hall.

Wind.—Prevailing direction, northwest.—*Dr. William B. Clark, Johns Hopkins University, Baltimore, director; Prof. Milton Whitney, Maryland Agricultural College, secretary and treasurer; C. P. Cronk, Observer, Weather Bureau, in charge.*

MICHIGAN.

Temperature.—The mean was 0.7 above the normal; maximum, 103, at Ivan, 8th; minimum, 31, at Grayling and Hillman, 29th.

Precipitation.—The average was 0.81 above the normal; greatest monthly, 9.47, at Hayes; least monthly, 0.90, at Atlantic.

Wind.—Prevailing direction, southwest.—*N. B. Conger, Observer, Weather Bureau, Detroit, director.*

MINNESOTA.

Temperature.—In the northwestern part of the state the mean was above the normal, while in the northeastern and southern parts it was below; maximum, 98, at Crookston, 5th, at Montevideo, 7th, and at Minneapolis and Kinbrae, 8th; minimum, 32, at Morris, 23d; greatest monthly range, 64, at Crookston and Montevideo; least monthly range, 41, at Duluth and Pine River Dam.

Precipitation.—The average was below the normal; greatest monthly, 5.23, at Crookston; least monthly, 0.69, at Montevideo.

Wind.—Prevailing direction, northwest.—*J. H. Harmon, Observer, Weather Bureau, Minneapolis, director.*

MISSISSIPPI.

Temperature.—The mean was about 2.0 below the normal; maximum, 106, at Columbus, 20th; minimum, 42, at Aberdeen, 29th, and at Port Gibson, 24th; greatest monthly range, 57, at Louisville; least monthly range, 32, at Ship Island.

Precipitation.—The average was 2.28 below the normal; greatest monthly, 6.25, at Logtown; least monthly, 0.14, at Lake.

Wind.—Prevailing direction, southwest.—*R. B. Fulton, Observer, Weather Bureau, University, director.*

MISSOURI.

Temperature.—The mean was above the normal; maximum, 1.08, at Proteem, 17th; minimum, 38, at Platte City, 24th.

Precipitation.—The average was 2.07 above the normal; greatest monthly, 13.10, at Steelville; least monthly, 2.37, at Proteem.—*Levi Chubbuck, Secretary of State Board of Agriculture, Columbia, director; A. L. McKee, Observer, Weather Bureau, assistant.*

NEBRASKA.

The month was one of low temperature, and there was more than the usual amount of rainfall.

Temperature.—Maximum, 106, at Superior and Long Pine; minimum, 30, at Long Pine.

Precipitation.—Greatest monthly, 6.18, at Ravenna; least monthly, 0.96, at De Soto.—*Prof. Goodwin D. Swezey, Crete, director; G. A. Loveland, Observer, Weather Bureau, assistant.*

NEVADA.

Temperature.—The mean was slightly below the normal; maximum, 101, at Sodaville, 23d, and at Belleville, 27th; minimum, 25, at Sunnyside, 8th; greatest monthly range, 73, at Sunnyside; least monthly range, 27, at Virginia City.

Precipitation.—The average was 0.60 below the normal; greatest monthly, 3.31, at Palmetto; least monthly, 0.00, at Palisade, Humboldt, Hot Springs, and Genoa.

Wind.—Prevailing direction, south.—*Prof. Charles W. Friend, Carson City, director; F. A. Carpenter, Observer, Weather Bureau, assistant.*

NEW ENGLAND METEOROLOGICAL SOCIETY.

Temperature.—The mean was 0.5 above the normal; maximum, 97, at Farmington, 10th, and at Lake Cochituate, Westborough, and North Grosvenor Dale, 11th; minimum, 33, at Berlin Mills, 20th; greatest monthly range, 59, at Farmington; least monthly range, 29, at Nantucket.

Precipitation.—The average was 0.42 below the normal; greatest monthly, 6.54, at Providence (c); least monthly, 1.15, at Portland.

Wind.—Prevailing direction, southwest.—*Prof. William H. Niles, Boston, Mass., president; Prof. Winslow Upton, Providence, R. I., secretary; J. Warren Smith, Observer, Weather Bureau, assistant.*

NEW JERSEY.

Temperature.—The mean was 1.8 below the normal; maximum, 100, at Tenafly and Somerville, 11th; minimum, 46, at Gillette, Dover, and Hanover, 1st; greatest monthly range, 53, at Somerville; least monthly range, 31, at Atlantic City.

Precipitation.—The average was 0.60 above the normal; greatest monthly, 8.89, at Locktown; least monthly, 2.58, at Lancewood.

Wind.—Prevailing direction, southwest.—*R. W. McGann, Observer, Weather Bureau, New Brunswick, director.*

NEW MEXICO.

Temperature.—Maximum, 100, at Albert, 19th; minimum, 34, at Monero, 31st; greatest monthly range, 53, at Estalina Springs; least monthly range, 37, at Gallinas Spring.

Precipitation.—Greatest monthly, 1.99, at Nogal; least monthly, 0.40, at Taos.—*H. B. Hersey, Observer, Weather Bureau, Santa Fe, director.*

NEW YORK.

Temperature.—The mean was 0.1 below the normal; maximum, 97, at Poughkeepsie, 11th; minimum, 37, at Arcade, 29th; greatest monthly range, 56, at Palermo; least monthly range, 30, at White Plains.

Precipitation.—The average was 0.60 above the normal; greatest monthly, 10.52, at Schodack Depot; least monthly, 1.91, at White Plains.

Wind.—Prevailing direction, southwest.—*Prof. E. A. Fieries, Dean of the College of Civil Engineering, Cornell University, Ithaca, director; R. M. Hardinge, Observer, Weather Bureau, assistant.*

NORTH CAROLINA.

The early part of the month was warm and favorable for the growth of crops, but the latter part was too cool, with very heavy rains, causing the condition of crops, especially cotton, to deteriorate rapidly.

Temperature.—The mean was 0.7 below the normal; maximum, 97, at Chapel Hill, 9th, at Douglas and Southern Pines, 10th, and at Morganton, 11th; minimum, 45, at Franklin, 24th; greatest monthly range, 47, at Franklin; least monthly range, 18, at Hatteras and Kitty Hawk.

Precipitation.—The average was 1.91 above the normal; greatest monthly, 16.30, at Smithfield; least monthly, 2.80, at Franklin.

Wind.—Prevailing directions, south and southwest.—*Dr. Herbert B. Battle, Raleigh, director; C. F. von Herrmann, Observer, Weather Bureau, assistant.*

NORTH DAKOTA.

Temperature.—The mean was about normal; maximum, 102, at Grand Rapids, 7th; minimum, 23, at Grand Rapids, 23d; greatest monthly range, 79, at Grand Rapids; least monthly range, 59, at Bismarck.

Precipitation.—The average was about 0.50 below the normal; greatest monthly, 2.96, at Fargo; least monthly, 0.14, at Power.

Wind.—Prevailing direction, northwest.—*W. H. Fallon, Observer, Weather Bureau, Bismarck, director.*

OHIO.

Temperature.—In the northern part of the state the month was 1.0 warmer than usual; elsewhere the mean temperature was normal; maximum, 101, at Bangorville, 10th; minimum, 39, at Wauseon, 29th.

Precipitation.—The average was 0.27 below the normal; greatest monthly, 5.62, at Georgetown; least monthly, 0.60, at Bellevue.

Wind.—Prevailing direction, southwest.—*Prof. B. F. Thomas, Columbus, director; C. M. Strong, Observer, Weather Bureau, secretary and assistant.*

OREGON.

The month was marked by continued excessively high temperature, especially from the 21st to the 29th, and by unusually heavy rainfall (for the season) the early part of the month.

Temperature.—The mean was 3.2 above the normal; maximum, 107, at Pendleton, 29th; minimum, 33, at Lakeview, 5th and 6th.

Precipitation.—The average was 0.26 above the normal; greatest monthly, 1.87, at Bandon; least monthly, 0.00, at Hardman, Pendleton, and New Bridge.

Wind.—Prevailing direction, north.—*Hon. H. E. Hayes, Master State Grange, Portland, director; B. S. Pague, Observer, Weather Bureau, asst.*

PENNSYLVANIA.

Temperature.—The mean was about 0.7 below the normal; maximum, 99, at Charlesville, 9th, and at Philadelphia (voluntary observer), 10th; greatest monthly range, 59, at Charlesville; least monthly range, 29, at Kennett Square.

Precipitation.—The average was about 0.75 above the normal; greatest monthly, 9.47, at Girardville; least monthly, 1.43, at New Castle.

Wind.—Prevailing direction, southwest.—*Under direction of the Franklin Institute, Philadelphia; L. M. Dey, Observer, Weather Bureau, assistant.*

SOUTH CAROLINA.

Temperature.—Maximum, 98, at Greenwood, 9th; minimum, 55, at Florence and Greenwood; greatest monthly range, 43, at Greenwood; least monthly range, 27, at Port Royal.

Precipitation.—Greatest monthly, 14.75, at Port Royal; least monthly, 4.30, at Chester.

Wind.—Prevailing direction, southwest.—*A. P. Butler, Observer, Weather Bureau, Columbia, director.*

SOUTH DAKOTA.

Temperature.—The mean was about 1.0 above the normal; maximum, 112, at Forest City, 7th; minimum, 25, at Castlewood, 23d; greatest monthly range, 75, at Aberdeen; least monthly range, 52, at Millbank.

Precipitation.—The average was 0.23 below the normal; greatest monthly, 5.89, at Tyndall; least monthly, 0.20, at De Smet.

Wind.—Prevailing direction, southeast.—*S. W. Glenn, Observer, Weather Bureau, Huron, director.*

TENNESSEE.

The excessive rains in the eastern part of the state had a damaging effect on tobacco and peaches, and in the western part a deficiency occurred and crops generally suffered.

Temperature.—The mean was 0.5 below the normal; maximum, 99, at Union City, 17th; minimum, 44, at Hohenwald, 29th.

Precipitation.—The average was 0.31 above the normal; greatest monthly, 10.38, at Clarksville.

Wind.—Prevailing direction, southwest.—*J. D. Plunket, M. D., Nashville, director; J. B. Marbury, Observer, Weather Bureau, assistant.*

TEXAS.

Temperature.—The mean was 1.0 to 2.0 over east Texas and the Panhandle; it was about 1.0 in the extreme west part; elsewhere it was about normal; maximum, 109, at Graham, 21st; minimum, 48, at Hartley and Hansford, 23d, and at Longview, 24th.

Precipitation.—The average was in excess in the northwestern part and on the middle coast; elsewhere it was below the normal; greatest monthly, 6.31, at Corpus Christi; least monthly, 0.02, at Rio Grande City.—*D. D. Bryan, Galveston, director; I. M. Cline, Observer, Weather Bureau, assistant.*

VIRGINIA.

Temperature.—Maximum, 103, at Richmond, 9th; minimum, 48, at Big Stone Gap, 24th; greatest monthly range, 50, at Richmond; least monthly range, 30, at Wytheville.

Precipitation.—Greatest monthly, 7.15, at Birdsnest; least monthly, 2.77, at Cape Charles.—*Dr. E. A. Craighill, Lynchburgh, director; J. N. Ryker, Observer, Weather Bureau, assistant.*

WASHINGTON.

The most marked characteristics were the high temperature and the excess in rainfall.

Temperature.—Maximum, 105, at Walla Walla, 29th; minimum, 36, at Waterville, 6th; greatest monthly range, 50, at Waterville; least monthly range, 28, at Fort Canby and Doe Bay.

Precipitation.—Greatest monthly, 3.26, at Doe Bay; least monthly, 0.14, at Fort Simcoe.

Wind.—Prevailing direction, northwest.—*E. B. Olney, Observer, Weather Bureau, Olympia, director.*

WISCONSIN.

Temperature.—The mean was 2 to 6 below the normal, except in the eastern part of the state; maximum, 104, at Elroy, 8th; minimum, 27, at Hayward, 28th.

Precipitation.—The average was below the normal, except in the northeastern part of the state, where there was an excess of 2.00 to 3.50; greatest monthly, 6.96, at Crandon; least monthly, 0.71, at Westfield.—*W. L. Moore, Observer, Weather Bureau, Milwaukee, director.*

CONTRIBUTIONS AND ORIGINAL ARTICLES.

FLUCTUATIONS OF TEMPERATURE AT THE BASE AND SUMMIT OF MOUNT WASHINGTON.

[By Prof. H. A. HAZEN, Weather Bureau.]

At the end of the charts in this REVIEW will be found a continuation of the curves which were published in July. These curves are for the months of January, February, and March of the years 1875, 1876, 1877, and 1878. A critical discussion of these curves is deferred until all are completed, but it is of interest to note one or two facts which are prominent.

1st. The fluctuations of temperature are almost identical at the base and summit.

2d. The summit curve has a marked tendency to reach its maximum and minimum points 8 to 16 hours earlier than that at the base.

3d. The temperature reaches its lowest point on the passage of a high area at the base. This is shown by the fluctuations of pressure in the dotted line.

4th. The temperature reaches its highest point on the passage of a low area or a storm at the base.

It frequently happens that a minimum of the temperature curve at the summit almost coincides with the minimum pressure at the base, and it might be thought that sometimes these two phases are coincident, but it will be seen at once that in no case is this true, but the slight advance of the temperature fluctuation at the summit causes this apparent coincidence.